Environmental Community Letter

October 2004

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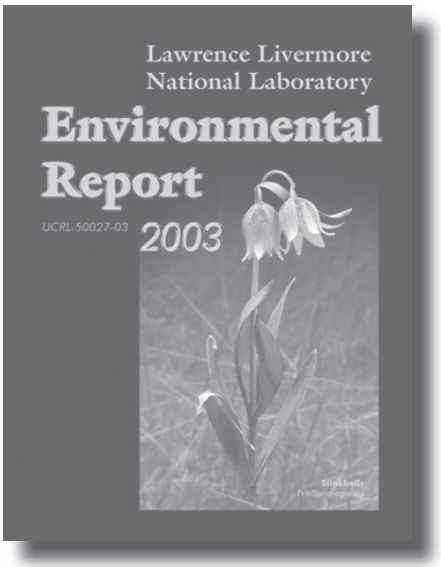
ENVIRONMENTAL REPORT 2003 OVERVIEW

Each year Lawrence Livermore National Laboratory (LLNL) publishes a site annual environmental report that assesses the impact of LLNL operations on the environment for the past year. It summarizes LLNL regulatory compliance activities and reports results of environmental monitoring. This Environmental Community Letter offers a summary overview of the report.

The *2003 Environmental Report* represents the collection and analysis of several thousand environmental monitoring samples. These samples are taken from the air, water, and wastewater discharges from two sites. The main site is located in Livermore, California. The other is Site 300, an experimental test facility, located near Tracy, California. Samples are also taken from vegetation, wine, and soil on site and in surrounding communities.

Many different assessments are made from these samples. For example, some groundwater samples may be assessed for 50 different chemicals or characteristics.



Environmental monitoring of LLNL operations in 2003 indicates no adverse impact to public health or the environment.

Specific Monitoring Activities

Air Monitoring

Air is monitored for radionuclides at various locations on the Livermore site and Site 300, throughout the Livermore Valley, and in the Tracy area. Concentrations of all monitored radionuclides and beryllium at all locations were well below levels that could endanger the environment or public health. For example, the highest concentration of plutonium for all ambient air sampling locations at the Livermore site, Site 300, and surrounding areas was 0.009% of the federal standard.

Emissions of nonradioactive air pollutants from LLNL operations in 2003 were also low. For example, total nitrogen oxide emission from the Livermore site was estimated at 63 kilograms per day. This is about 0.09% of the amount released daily from all stationary sources in the Bay Area.

Approximately 101 kilograms per day of regulated air pollutants (including nitrogen oxides, volatile organics, sulfur oxides, particulate matter, carbon monoxide, and lead) are emitted from the Livermore site. About 3.1 kilograms per day are emitted from Site 300. These releases from the LLNL sites are less than 0.1% of the total daily emissions in the entire Bay Area.

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Wastewater Monitoring

The Livermore site discharges about 950,000 liters of wastewater daily to the City of Livermore sanitary sewer system. This is 3.8% of the total flow to the City's system.

Sewage flow from the Livermore site to the Livermore Water Reclamation Plant (LWRP) is monitored continuously. If any significant releases of radioactivity, metals, or high or low pH water are detected, the wastewater is redirected to a sewer diversion system before it leaves the Livermore site. It is then treated and disposed of appropriately or returned to the sanitary sewer if it meets permit conditions.

These were no wastewater permit violations issued in 2003.

Drinking Water Monitoring

In 2003, the maximum tritium activity measured in off-site drinking water was less than 0.2% of the regulatory maximum contaminant level.

Gross alpha and gross beta radioactivity measurements were also well below regulatory levels of concern.

Groundwater Monitoring

In the Livermore Valley, no monitored radioactive or inorganic nonradioactive constituent was found to exceed primary drinking water standards in any off-site well.

Shallow groundwater in certain areas beneath Site 300 contains volatile organic compounds (VOCs), tritium, nitrate, Freon, perchlorate, and depleted uranium. These present no current health risks because the shallow groundwater is not used as a water supply source.

Soil and Sediment Monitoring

Most analyses of 2003 on-site soil samples did not detect any nonradiological contaminants labeled as potential constituents of concern. A few analyses detected either trace amounts of contaminants or naturally occurring background concentrations. Radiological results were unchanged from very low levels of previous years. Elevated concentrations of depleted uranium continue to be found at some locations within Site 300. Findings are within the ranges seen in the past and present no threat to employees or the public.

ATSDR Reports

The federal Agency for Toxic Substances and Disease Registry (ATSDR) confirmed that in 2003 there was no threat to human health from plutonium in old sewage sludge. The report presents a thorough public health evaluation of the sampling data (see ATSDR Public Health Assessment on Plutonium 239 Sludge at http://www-envirinfo.llnl.gov).

LLNL released plutonium below permitted levels to the Livermore sanitary sewer in the 1960s. The plutonium could be found at very low levels in sewage sludge made available to the public as a soil amendment.

No health risk from the plutonium in the sludge was found at that time or since. Over the years, state and federal regulatory agencies have confirmed that finding after many detailed, public investigations.

Off-site Vegetation and Wine Monitoring

In general, off-site monitoring for tritium in vegetation and wine showed low values not significantly different from those for the past few years.

As usual, there was slightly more tritium near the Livermore site than was found at more distant locations. Potential ingestion dose estimates were well below regulatory levels of concern, even with organically bound tritium taken into account.

Groundwater Remediation

As of 2003, groundwater treatment facilities at the Livermore site have processed over 8.4 billion liters of groundwater since 1989. Over 1554 kilograms of VOCs were removed during groundwater and soil vapor treatment in that period.

Since treatment began at Site 300, about 977 million liters of groundwater have been treated. About 234 kilograms of VOCs have been removed from soil and groundwater.

Waste Minimization and Pollution Prevention

Waste generation at LLNL generally continues to decrease. There were reductions over the past year in low level radioactive and mixed waste, as well as routine nonhazardous solid waste. One-time extremely nonhazardous wastes were cut to a quarter of what they were five years ago.

Total routine and nonroutine waste diverted from landfills in 2003 was 26,502 metric tons. This includes almost 5 tons of toner cartridges, 278 tons of paper and 27 tons of batteries.

Radiological Dose Assessment

Every year a theoretical radiological dose from LLNL to the public is calculated. The dose is based upon what an individual would receive if someone lived for a year where the highest radiation dose from releases to the air would occur. For the Livermore site that dose was 0.044 millirem in 2003. For Site 300 it was 0.017 millirem.

These doses are very small compared with an average annual radioactive dose of 360 millirem received from radiation present normally and naturally in the environment. Federal radioactivity exposure standards limit the annual dose an individual can receive to 10 millirem. LLNL has never exceeded these federal standards.

Regulatory Compliance

LLNL must meet all applicable federal, state, regional, county, and local environmental requirements. For example, in 2003, the Bay Area Air Quality Management District issued or renewed about 180 operating permits for the Livermore site. The San Joaquin Valley Unified Air Pollution Control District issued or renewed permits for 42 air emissions sources at Site 300.

LLNL also has permits for medical waste, hazardous waste treatment and storage, underground storage tanks, and for discharge of treated groundwater, industrial and sanitary sewage, and storm water. Site 300 has additional permits for inactive landfills, cooling tower discharges, operation of a sewer lagoon, septic tanks, and leach fields.

Numerous federal, state and area regulatory agencies conduct inspections at both Livermore and Site 300. There were no violations that caused an impact to human health or to the environment.

Endangered Species

LLNL meets the requirements of the U.S. Endangered Species Act and the California Endangered Species Act. In 2003, monitoring for the California red-legged frog continued at the Livermore site. Biological surveys were conducted for proposed LLNL projects at Site 300 that had the potential to disturb special-status species. No San Joaquin kit fox has been seen at Site 300 but American badgers have been found, and active western burrowing owl dens identified. Three rare plant populations continue to be monitored at the site.

WHAT IS AN ANNUAL ENVIRONMENTAL REPORT?

Each year LLNL is required to prepare hundreds of different reports for regulatory agencies charged with regulating LLNL.

Among the agencies working with the Laboratory to protect public health and the environment are the U.S. Environmental Protection Agency, regional air and water boards, and the California Department of Toxic Substances Control.

These agencies, as well as the U.S. Department of Energy (DOE), National Nuclear Security Administration, and the University of California, oversee LLNL operations and monitor any impacts that LLNL operations may have on the public or the environment.

Environmental monitoring data collected and the related modeling, analysis, and conclusions are presented to regulatory agencies and are available to the public in the annual environmental report.

The *Environmental Report 2003* is available at LLNL environmental repositories and on the Web at: http://www-envirinfo.llnl.gov/ under Site Annual Environmental Report.

Please call me at (925) 424-4026 or email heffner1@llnl.gov with any questions.

H. F. Heffner, Manager, Environmental Community Relations, Environmental Protection Department

Federal Agency Completes LLNL Public Health Assessment: No Health Hazards Found

A Public Health Assessment of the Laboratory site in Livermore was completed in mid-2004 by the nation's top public health agency. The assessment is available at http://www-envirinfo.llnl.gov/ (See "ATSDR Completes LLNL Public Health Assessments").

The federal assessment found, "No Apparent Public Health Hazard" from past and ongoing operations of the Laboratory. An assessment of Site 300 by the same federal agency is expected in late 2004.

The findings mean, "that although community exposures of site-related contaminants may have occurred or may be occurring, the resulting doses are unlikely to result in any adverse health effects and are consequently below levels of health concern."

The health assessment notes that, "Past and present pathways of community exposure are below levels of public health concern." Also, "The current environmental monitoring program conducted by LLNL is adequate to ensure that future releases of hazardous substances will not present a future public health hazard."

The health assessment was completed by the Agency for Toxic Substances and Disease Registry, and took about ten years. The Agency is part of the Centers for Disease Control of the U.S. Department of Health and Human Services. It is responsible for assessing public health impacts at U.S. Department of Energy sites undergoing environmental restoration.

Questions about the Livermore Main Site Public Health Assessment may be directed to ATSDR's Mark Evans at 404-498-0363.

This work was performed under the auspices of the U.S. Department of Energy by University of California Lawrence Livermore National Laboratory under Contract W-7405-ENG-48. UCRL-AR-207510